

Remarks

Discussion of the Amendments

Upon entry of the amendment, claims 1-12, 14, 16, 18, and 19-24 will be pending. Claims 19-24 are new. Claims 1-12, 14, and 16 are amended so as to improve readability and to better describe the claimed invention. Support for the "disc-shaped" limitation of claims 1 and 14 and the diameter and thickness limitations is found at page 5, 2nd ¶. Support for the "different fat content" limitation is found at page 5, third paragraph. Support for the new claims is found in the original disclosure. For example, new claim 19, which includes a limitation previously introduced into claim 14, is supported by the original disclosure (German original WO 03/084341) at page 6, as previously described at page 5 of Applicants' response filed December 30, 2008. Claims 20-21 are supported at page 6, ¶ 5. Claims 22-23 are supported at page 5, ¶ 2. Claim 24 is supported at page 7, ¶ 2. No new matter is believed to be added upon entry of the amendment.

Problems Solved by the Present Invention and Unexpected Results

Aquariums containing multiple aquatic organisms provide an aesthetic appeal to adults and children alike, but maintaining this aesthetic appeal can require substantial care and maintenance especially if the aquarium contains multiple species of aquatic organisms. It is difficult to satisfy the nutritional and feeding behaviors of these multiple aquatic organisms because their nutritional and feedings behaviors, as well as health requirements, can be quite different.¹ For instance the multiple aquatic organisms can have a feeding zone preference whether it is on the surface of the water at the bottom of the tank or somewhere in between.² If the feed is not ingested during its residency in the particular feeding zone, then "that feed not ingested sinks to the bottom, clouds the water, and negatively influences the water quality."³ Failure to ingest the food in the particular feeding zone can result in malnourishment, which in

¹ See Specification at page 2, ¶ 1.

² *Id.*

³ *Id.*

turn, can be traced back a "large number of health problems."⁴ The possibility of malnourishment is exacerbated when multiple feed mixtures are offered to the aquatic organisms because "one can observe that the aquatic animals first snatch at certain feed types or visible components, while ignoring others."⁵ Thus, a challenge is to provide a unitary fish feed that not only has the proper nutritional, and (if necessary) medicinal, balance, but that also has the proper buoyancy and is optically attractive.

These problems are solved by a feed for aquatic animals that contains, in disc-shaped, single-piece units, at least two feed mixtures of different composition, wherein the single-piece units consist of **at least two contiguous zones having different fat content that merge into each other** and contain the feed mixtures separately from each other, wherein a first feed mixture in a centre zone of the feed is surrounded by a second feed mixture in a second zone.

Applicants believe that the disc-shaped feed for aquatic animals having "at least two contiguous zones having different fat content that merge into each other" is unexpected at least for the reason that one of ordinary skill would not expect that merger of the at least two contiguous zones having different fat contents would be feasible. An appreciation of this unexpected aspect may be better understood by consideration of the following information.

Applicants direct the Examiner's attention to a description of feed having two differently-colored zones.⁶ For convenience, this information is summarized briefly. Two feed mixtures, constituting the different zones, are extruded and "cut by a rotating knife into discs of 3 mm diameter and a thickness of 1 mm."⁷

⁴ *Id.* at page 1, ¶ 5.

⁵ *Id.* at page 2, ¶ 3.

⁶ *Id.* at page 8 generally and specifically last ¶.

⁷ *Id.* at page 8, last ¶.

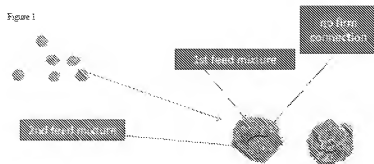
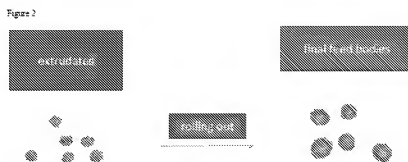


Figure 1 provides a magnified image of the appearance of selected discs containing a 1st feed mixture (red, outer) and 2nd feed mixture (yellow, inner), where the 1st and 2nd feed mixtures have a different fat content. As can be seen from this figure, the two feed mixtures do not appear to be firmly connected to one another. However, further processing (e.g., rolling out) the discs merges the two contiguous zones providing a feed containing single-piece units, as can be seen in Figure 2.



Figures 3 and 4 show the same aspect, but for a different feed.

Figure 3

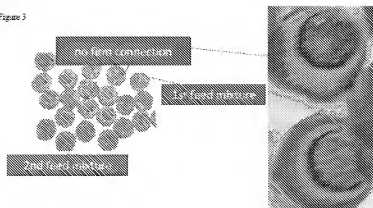
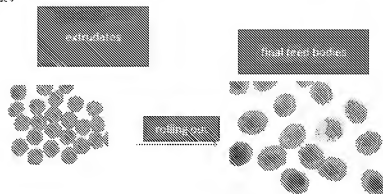


Figure 4



Applicants believe that it is unexpected that the cut extrudate having "at least two contiguous zones having different fat content" could be further processed so as to obtain a stable single-piece unit (i.e., that would "merge into each other") which would not likely fall apart. In view of the explanation provided above, Applicants believe that the claimed feed is unobvious over the combined disclosure relied upon by the Office.

Applicants would also like to bring to the Examiner's attention that certain commercial embodiments of the claimed feed for aquatic animals are presently sold in the United States, such as, TetraMin Tropical Crisps; TetraMin Crisps Select-A-Food; TetraColor Tropical Crisps; TetraAlgae Tropical Crisps; TetraCichlid Crisps; and TetraFin Goldfish Crisps. Applicants have been surprised by the commercial success of these products and ask that the Examiner consider that Tetra, the assignee of record, has observed a **four-fold increase in sales** in the last seven

years, for products that fall within the scope of the claimed feed. Applicants find this to be a measure of the commercial success of products that fall within the scope of the claimed feed and ask that the Examiner consider this information in weighing the patentability of the claims.

Separately, Applicants discovered a consumer product review, by "Rainer Mueller" who provided comments for TetraMin Tropical Crisp Fish Food (a commercial embodiment that falls within the scope of the claimed feed), on June 3, 2009 that reads:⁸

I originally purchased my first batch of this food last fall and discovered how well my fish, lemon cove cichlids, liked the food. It's kind of like the Pringle potato chip of the fish world where every piece is a [sic] flat disc shape. The fish literally hit the food, and none is wasted. I use an automatic feeder which doses the precise amount I want fed at feeding times.

I will continue to buy these Tropical Crisps for my fish in my aquarium.

Applicants were surprised to see these positive comments for their commercial product falling within the scope of the claimed feed. Applicants likewise ask that the Examiner consider this information in determining the patentability of the claims.

Finally, Applicants ask that the Examiner consider the following information when considering the patentability of the claimed feed. Tetra has long sold feed for aquatic animals in the form of flakes, see TetraMin Tropical Flakes image below. A commercial embodiment that falls within the scope of the claimed feed is TetraMin Crisps Select-A-Food, as seen by the image below.



⁸ See http://www.amazon.com/Tetramin-Tropical-Crisp-Fish-Food/product-reviews/I30002D12LO/ref=dp_db_cm_cr_aer_txt?ie=UTF8&showViewpoints=1, accessed on March 18, 2010. See **Exhibit 1** for a PDF copy of this webpage. Upon information and belief, Tetra believes that "Rainer Mueller" is not an employee of Tetra or is otherwise interested in the commercial success of Tetra's product.

Applicants note that embodiments that fall within the scope of the claimed feed provide for up to about 35% less waste than when compared to the TetraMin Tropical Flakes. The term "less waste" refers to the powder fraction that is not consumed by the aquatic animals. This aspect results in improved water quality and less aquarium maintenance. Applicants consider this to be a substantial improvement, which is attributable to the claimed feed, and asks that the Examiner consider this information when considering the patentability of the claimed feed.

At present, claims 1-12, 14, 16-18 are rejected under 35 U.S.C. § 103(a) over the combined disclosure of: (1) GB 1351878 ("Axelrod-1"); (2) U.S. Patent No. 5,128,153 ("Axelrod-2"); (3) DE 3212406 ("Tetra"); (4) JP 57-43220 ("Nosan"); (5) U.S. Patent No. 3,851,084 ("Rossen"); (6) U.S. Patent No. 4,757,948 ("Nonaka"); (7) U.S. Patent No. 5,143,740 ("Blanchard"); (8) U.S. Patent No. 6,207,202 ("Crews"); (9) U.S. Patent No. 4,239,782 ("Cinquemani"); and (10) U.S. Patent No. 5,773,051 ("Kim").

Applicants traverse the outstanding rejection and respectfully request that the Examiner reconsider and withdraw the outstanding rejection and allow the pending claims.

Simply stated, the combined disclosures do not disclose or fairly suggest a feed for aquatic animals that contains, in disc-shaped, single-piece units, at least two feed mixtures of different composition, wherein the single-piece units consist of **at least two contiguous zones having different fat content that merge into each other** and contain the feed mixtures separately from each other, wherein a first feed mixture in a centre zone of the feed is surrounded by a second feed mixture in a second zone.

As noted above, Applicants believe that an unexpected aspect of the feed is that one of ordinary skill would not have expected that the cut extrudate (used to obtain the feed) could be further processed so as to obtain a stable single-piece unit which would not likely fall apart. Moreover, the primary disclosures of Axelrod-1, Axelrod-2, and Tetra do not disclose or suggest the claimed feed and the method for producing a feed.

Axelrod-1 discloses elongated bar foodstuffs, for aquatic animals such as fish, "comprising a plurality of spaced sections each having at least one transverse layer of food that is softenable in water, and a relatively harder transverse barrier layer that is only slowly soluble in

water disposed between each adjacent section."⁹ The alternation of layers of readily softened edible food with hard layers that require 20-22 hours to dissolve allows for a bar of adequate length to supply food for at least a week."¹⁰ Axelrod-1 does not disclose the unexpected aspect of the claimed feed.

Axelrod-2 discloses fish food spherically-shaped pellets comprising concentric dislodgeable layers, with fat globules, on the outer surface and between layers, which are freed from the food when contacted by water.¹¹ As acknowledged by the Office, Axelrod-2 discloses pellets and so is different from the claimed feed. Axelrod-2 does not disclose extrusion, but rather discloses a manufacturing intensive process that includes applying 15 or 30 small dabs (or globules) of lard on the surface of layers.¹²

The Tetra English Abstract discloses a feed film for fish in which at least one second layer is applied by pressing to the surface of the film. Although Tetra discloses the use of pressure rollers, the purpose there is to press one layer onto a feed film not to further process a cut extrudate.

Accordingly, these references are related to elongated bar foodstuffs (Axelrod-1), fish food pellets (Axelrod-2), and feed film (Tetra). Applicants believe that the selection of certain information from different references so as to arrive at the claimed feed must be accompanied by a reasoned explanation of how one of ordinary skill would arrive at the claimed invention. Here, the Office has proposed that one can arrive at the claimed feed by utilizing the layered bars of Axelrod-1 or the spherically-shaped pellets containing fat-globules of Axelrod-2, and then taking either composition of Axelrod-1 and Axelrod-2 and converting the same into feed film, as proposed by Tetra. This reasoning does not follow at least for the fact that there is no suggestion that such a composition would be desirable. Moreover, the combined disclosure does not suggest (either implicitly or explicitly) the proposed modification. Finally, this proposed

⁹ Axelrod-1 at p. 1, ll. 72-77.

¹⁰ *Id.* at p. 2, ll. 27-46.

¹¹ Axelrod-2 at col. 2, ll. 46-48.

¹² Axelrod-2 at col. 4, ll. 7-9 and 14-15.

reasoning falls short because it fails to disclose an unexpected aspect of the claimed feed having "at least two contiguous zones having different fat content that merge into each other," as well as other secondary considerations presented above. Furthermore, Applicants believe that any one of the secondary references relied upon by the Office do not rectify the deficiencies of the primary references noted above (see references (4) – (10).

Although Nosan discloses a feed for marine echinozoans in the form of homogeneous flat plates made by extruding a mixture through a die, cutting, and press molding,¹³ Nosan's flat plate feed "instantaneously settles to the bottom of a body of water."¹⁴ Nosan differs from the claimed feed in that Nosan's flat plate feed is a homogeneous plate, whereas the claimed feed "contains, in disc-shaped, single-piece units, at least two feed mixtures of different composition, wherein the single-piece units consist of at least two contiguous zones having different fat content that merge into each other and contain the feed mixtures separately from each other, wherein a first feed mixture in a centre zone of the feed is surrounded by a second feed mixture in a second zone." Thus, the flat plates disclosed in Nosan still fall short of the claimed feed, especially in view of any one of the primary disclosures. This is particularly true when one considers that the feed disclosed in Nosan is for echinozoans, which have different feeding behavior because "it is not possible for these organisms to aggressively ingest food floating in the water in the manner of typical fish and crustaceans by swimming, but rather passively ingest food that has settled to the bottom."¹⁵ This should be contrasted to the claimed feed which is intended to satisfy the feeding requirements for aquatic organisms, in general, and not just bottom-dwelling echinozoans.

Rossen discloses methods of producing laminated cereal and snack food products from starch-containing (or dough) materials by means of an extruding device.¹⁶

Applicants note that the Rossen's products shown in Figs. 16- 24 can only be obtained by extrusion of mixtures not having a markedly different fat content (in the sense of one zone

¹³ Nosan at p. 4, l. 1.

¹⁴ *Id.* at p. 2, l. 1; see also p. 3, ll. 3-4.

¹⁵ See Nosan at page 2. The citation here is based on the English translation of JP 57-43220 (Nosan) of record in the present application.

¹⁶ Rossen at col. 1, ll. 11-19.

containing fat-rich feed) and being processed at high pressure and high temperature. These conditions allow obtaining products wherein the feed mixtures are firmly connected without further processing. This is due to the at least similar flow behavior of both mixtures in the contact area due to their similar content with respect to fat.¹⁷

In the present application, however, the claimed feed contains, in disc-shaped, single-piece units, at least two feed mixtures of different composition, wherein the single-piece units consist of at least two contiguous zones having different fat content that merge into each other. This leads to a different behavior between the two feed mixtures in the contact zone in the extruder. Fat-rich feed displays very different flow characteristics compared to fat-poor mixtures due to a different friction, different properties under pressure, etc. This different flow behavior, however, leads to a swirling of the feed mixtures in the contact zone instead of an essentially laminar flow as described in Rossen. This swirling, however, seems to be the reason, why feed mixtures having a different fat content (as those used in the present application) can not be connected firmly simply by extrusion.

The Office has contended that subjecting the materials of Axelrod-1, Axelrod-2, or Tetra using Rossen's manufacturing process followed by Nosan's pressing/rolling method would allow one of ordinary skill to arrive at the claimed feed. Applicants believe that this reasoning is improper because it does not account for the unexpected processing aspects of feed for aquatic animals that contains, in disc-shaped, single-piece units, at least two feed mixtures of different composition, wherein the single-piece units consist of at least two contiguous zones having different fat content that merge into each other and contain the feed mixtures separately from each other, wherein a first feed mixture in a centre zone of the feed is surrounded by a second feed mixture in a second zone. Applicants believe that an extrudate containing at least two feed mixtures having differing fat content would be expected to be fragile because there is no firm connection between the two feed mixtures. Therefore, Applicants found it to be most surprising that the extrudate could be further processed to obtain single-piece units that consist of at least two contiguous zones having different fat content that merge to form a stable feed.

¹⁷ *Id.* at col. 5, ll. 56-73.

Applicants believe that the remaining disclosures of Nonaka (process of producing a high total dietary corn fiber), Blanchard (process for preparing cereal flakes), Crews (adding vitamins to fish food), Cinquemani (adding vitamins to fish food), Kim (adding vitamins to fish food) and Stokkebyes (adding antibiotics to feed for fowl) do not rectify this fundamental deficiency. Accordingly, Applicants respectfully request that the Examiner reconsider the outstanding rejection in view of the comments made herein and allow the pending claims.

Applicants believe that as none of the references disclose or fairly suggest the claimed feed and the claimed process for making feed, the Office cannot sustain a prima facie holding of obviousness. Moreover, even if the Office were to maintain its position, Applicants kindly request the Examiner considers the above-noted unexpected features realized by embodiments of the claimed feed.

Summary

Applicants have amended the claims to better describe the claimed feed and the claimed process for making feed. In addition, Applicants have outlined substantial differences between the pending claims and the references of record and have provided secondary considerations for the Examiner's review. Accordingly, Applicants believe that claimed feed and the claimed process for making feed is unobvious. Applicants kindly request that the Examiner acknowledge the same and reconsider the patentability of the present claims.

Conclusion

In view of the above amendments and remarks, Applicants respectfully request a Notice of Allowance. If the Examiner believes a telephone conference would advance the prosecution of this application, the Examiner is invited to telephone the undersigned at the below-listed telephone number.

The Office is hereby authorized to charge any deficiencies which may be required, or credit any overpayment, to Deposit Account No. 13-2725.



Date: April 1, 2010

Respectfully submitted,
MERCHANT & GOULD P.C.
P.O. Box 2903
Minneapolis, Minnesota 55402-0903
(404) 954-5061
/Daniel R. Evans/
Daniel R. Evans, Ph.D.
Registration No. 55,868

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I will continue to buy these Tropical Crisps for my fish in my aquarium.

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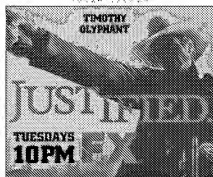


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